

Appl. No. 10/635,489
Amendment dated: December 8, 2005
Reply to OA of: September 12, 2005

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1(currently amended). A method for transforming an amorphous silicon layer into a polysilicon layer, comprising:

providing an amorphous silicon substrate, and doping said amorphous silicon substrate with an inert gas atom, ~~wherein said amorphous silicon substrate comprising an amorphous silicon buffer layer and an amorphous silicon layer on said amorphous silicon buffer layer; and~~ wherein the step of providing said amorphous silicon substrate comprises:

forming an amorphous silicon buffer layer on a substrate, and;

forming an amorphous silicon layer on said amorphous silicon buffer layer; and

heating the surface of said amorphous silicon substrate by ~~heat treatment or thermal process~~ laser annealing.

2(previously presented). The method of claim 1, wherein said inert gas atom is selected from a group consisting of helium, neon, argon, krypton, xenon, radon and mixtures thereof.

3(original). The method of claim 2, wherein said inert gas atom is argon.

4(original). The method of claim 1, wherein the atom percentage of said inert gas atom in said amorphous silicon substrate is in the range of from 1 to 0.001.

5(original). The method of claim 1, wherein said inert gas atom is doped by plasma doping.

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6(original). The method of claim 1, wherein said inert gas atom is doped by chemical vapor deposition.

7(canceled).

8(original). The method of claim 1, wherein said polysilicon substrate is a panel of a liquid crystal display.

9(currently amended). The method of claim 1, wherein said ~~heat treatment~~ laser annealing is an excimer laser annealing.

10(original). The method of claim 9, wherein the process window of said excimer laser is in the range of from 300 to 450 mJ/cm².

11(previously presented). The method of claim 1, wherein said amorphous silicon buffer layer is formed by plasma enhanced chemical vapor deposition.

12(new). A method for transforming an amorphous silicon layer into a polysilicon layer, comprising:

forming an amorphous silicon layer on a substrate;
doping said amorphous silicon layer with an inert gas atom; and
heating the surface of said amorphous silicon layer by laser annealing.

13(new). The method of claim 12, wherein said laser annealing is an excimer laser annealing.

14(new). The method of claim 13, wherein the process window of said excimer laser is in the range of from 300 to 450 mJ/cm².

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15(new). The method of claim 12, wherein said inert gas atom is selected from a group consisting of helium, neon, argon, krypton, xenon and radon.

16(new). The method of claim 12, wherein the atom percentage of said inert gas atom in said amorphous silicon substrate is in the range of from 1 to 0.001.

17(new). The method of claim 12, wherein said inert gas atom is argon.

18(new). The method of claim 12, wherein said inert gas atom is doped by continuous laser pulses.

19(new). The method of claim 12, wherein said amorphous silicon buffer layer is formed by plasma enhanced chemical vapor deposition.